

SINTESIS KALIKS[4]RESORSINARENA DARI TURUNAN VANILIN SEBAGAI SENYAWA AKTIF TABIR SURYA

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INTISARI

Sintesis dan uji pendahuluan tiga senyawa C-4-aliloksi-3-metoksifenilkaliks[4] resorsinarena benzoat-sinamat sebagai senyawa tabir surya telah berhasil dilakukan. Dua turunan C-4-aliloksi-3-metoksifenilkaliks[4]resorsinarena difungsionalisasi dengan benzoat dan sinamat untuk memperoleh senyawa tabir surya.

Sintesis dilakukan melalui tiga tahap reaksi yaitu sintesis 4-aliloksi-3-metoksibenzaldehida, C-4-aliloksi-3-metoksifenilkaliks[4]resorsinarena, dan C-4-aliloksi-3-metoksifenilkaliks[4]resorsinaril benzoat-sinamat. Elusidasi struktur senyawa yang dihasilkan dilakukan menggunakan spektrofotometer IR, spektrofotometer UV-Vis, ¹H-NMR, ¹³C-NMR dan HR-MS. Pengujian produk yang dihasilkan meliputi penentuan λ_{maks} dan koefisien ekstingsi molar (ϵ), fotostabilitas, dan antioksidan.

Senyawa hasil sintesis C-4-aliloksi-3-metoksifenilkaliks[4]resorsinarena, C-4-aliloksi-3-metoksifenilkaliks[4]resorsinaril oktabenzoat, C-4-aliloksi-3-metoksifenilkaliks[4]resorsinaril oktasinamat memiliki rendemen berturut-turut 86,6, 71,1, dan 65,5%; panjang gelombang maksimum (λ_{maks}) 288, 293, dan 307 nm, koefisien ekstingsi molar (ϵ) 12,9, 39,1, dan 85,3 mol L⁻¹cm⁻¹, SPF 5,97; 14,90, dan 26,99, IC₅₀ 0,54, 7,70; < 0,002 µg/mL. Ketiga senyawa hasil sintesis memiliki potensi sebagai senyawa tabir surya

Kata kunci: kaliks[4]resorsinarena, tabir surya, sinamat, benzoat

SYNTHESIS OF CALIX[4]RESORCINARENES FROM VANILLIN DERIVATIVE AS SUNSCREEN COMPOUNDS

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ABSTRACT

Synthesis of three compounds of C-4-allyloxy-3-methoxyphenylcalix [4] resorcinarene benzoate-cinnamate as sunscreen have been conducted. Two of C-4-allyloxy-3-methoxyphenylcalix[4]resorcinarene were functionalized with benzoate and cinnamate to obtain the sunscreen compounds.

The synthesis was carried out three stages of reaction. There were syntheses of 4-allyloxy-3-methoxyphenylcalix, C-4-allyloxy-3-methoxyphenyl calix[4]resorcinarene, and C-4-allyloxy-3-methoxyphenyl calix[4]resorcinaryl benzoate-cinnamate. Structural elucidation of products were performed using IR spectrometer, UV-Vis spectrometer, $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and HR-MS. Tests of product were included the determination of λ_{mak} and molar extinction coefficients (ϵ), photostability, and antioxidants.

The products of C-4-allyloxy-3-methoxyphenylcalix resorcinarene, C-4-allyloxy-3-methoxyphenylcalix[4]resorcinaryl octabenzoate, C-4-allyloxy-3-methoxyphenylcalix[4]resorcinaryl octacinnamate were produced 86.6, 71.1 and 65.5% respectively, maximum wavelength (λ_{maks}) 288, 293, and 307 nm; molar extinction coefficient (ϵ) 12.9, 39.1, and 85.3 mol L $^{-1}$ cm $^{-1}$, SPF 5.97, 14.90, and 26.99, IC $_{50}$ 0.54, 7.70, < 0.002 $\mu\text{g/mL}$. The products have been potential as a sunscreen agents.

Keywords: Calix[4]resorcinarene, sunscreen, cinnamate, benzoate